

REMARKS

This is in response to the Office Action of January 30, 2007. Claims 1, 3, 7, 9, 13, 15, 19, and 21 are amended without change of scope to indicate that the recited Rmax values are percentages. As pointed out in a previous response, the claims herein compare the roughness of a substrate layer to the thickness of an organic layer. Assuming that the thickness of the organic layer is 100 (unitless), the roughness of the substrate layer is specified to be "0 to 50" (also unitless). See the specification, page 5, lines 13-16. If the thickness of the organic layer were 200 nm, the roughness of the substrate layer would be 0 to 100 nm, while if the thickness of the organic layer were 50 nm, the roughness of the substrate layer would be 0 to 25 nm. Thus, whatever the thickness of the organic layer, the roughness of the substrate layer is no more than "half" thereof or 50% thereof ("50" versus "100"). As indicated in the specification, details of the procedure for measuring Rmax are set forth in published international standard JIS B 0601-1982. New claims 25 and 26 are added, based upon such disclosure as that appearing in lines 21-22 on page 5 of the specification. No new matter is added to the application by this Amendment. Claims 1-26 are pending in the application.

Claim rejection - 35 USC § 112, ¶ 1

Claims 1, 7, and 13 were rejected under the first paragraph of 35 USC §112. Office Action, page 2. The Examiner argues that the clause "said organic layer has a glass transition temperature of from 40°C to a temperature 40°C higher than the flow-starting temperature" in claims 1, 7, and 13 is not supported. The Examiner's attention is respectfully directed to the paragraph bridging pages 30-31 of the specification, which teaches that "The glass transition temperatures of the organic layer ... are ... the transfer temperature + 40°C" and "The flow-starting temperatures of the organic layer ... are ... the transfer temperature + 40°C". The expression "temperature + 40°C" can only mean a temperature that is 40°C higher than the temperature referred to. That is, the language "the flow-starting temperature + 40°C" means a temperature which is 40°C higher than the flow-starting temperature. Thus the clause in question has ample basis in the original disclosure. The Examiner refers to disclosure in lines 18-19 on page 22 of the specification. That disclosure – "the organic layer ... [has] a glass transition temperature ... of higher than 40°C" – is not inconsistent with the range recited in the claims, and in fact echoes the range recited in the claims "a glass transition temperature of from 40°C to

a temperature 40°C higher than the flow-starting temperature". In any event, the full context of disclosure in lines 17-2 on page 22 of the specification should be considered in this regard.

Claim rejections - 35 USC § 112, ¶ 2

Claims 1, 3, 7, 9, 13, 15, 19, and 21 were rejected under the second paragraph of 35 USC §112 as failing to define the invention properly. Office Action, pages 3 and 6. The Examiner argued that the recitation in the claims of the language "assuming that" renders the claims indefinite. Applicant does not agree, and continues to believe that the original claim language would be readily understood by those skilled in the art. However, the terminology in question has been deleted from the claims in order to advance the prosecution of the present application.

Prior Art Rejection – claims 1-3, 5-9, and 11-24

Claims 1-3, 5-9, and 11-24 were rejected under 35 U.S.C. §102(b) as being anticipated by US 2003/0049560 A1 (Nirmal), with an article by Zhang being cited as evidence to show that PVK – that is, poly(N-vinylcarbazole) – in fact has a glass transition temperature greater than 40°C. Office Action, pages 3-6. The rejection is respectfully traversed.

Claims 1 and 7 are drawn to methods for producing organic electroluminescent devices. Claims 13 and 19 are drawn to organic electroluminescent devices. Major distinguishing features of independent claims 1, 7, 13, and 19 in their present form include:

- (1) the first substrate in the present claims has a maximum surface roughness R_{max} in the range of 0% to 50% (which is obtained from a ratio of a maximum surface roughness R_{max} of the first substrate to the thickness of the organic layer), and
- (2) the organic layer in the present claims has a glass transition temperature in the range from 40°C to a temperature that is 40°C higher than the flow-starting temperature.

As a result of these expressly recited features of the present invention, the organic layer can be easily formed on a substrate to produce a uniform organic electroluminescent device with a good lamination interface. This enables the improved manufacture of full-color display devices, backlights of liquid crystal display devices, illumination surface light sources, light source arrays of printers, and the like. See the specification, page 86, lines 16-24.

The Nirmal reference neither teaches nor suggests these two distinguishing features of the present invention – that is, (1) that the first substrate in the present claims has a maximum surface roughness R_{max} in the range of 0% to 50%, obtained from a ratio of a maximum surface

roughness R_{max} of the first substrate to the thickness of the organic layer, and (2) that the organic layer in the present claims has a glass transition temperature of from 40°C to a temperature that is 40°C higher than the flow-starting temperature. Therefore the presently claimed invention is not placed in the possession of persons of ordinary skill in the art (i.e., is not enabled) by the Nirmal disclosure.

The Examiner relies upon the Zhang reference to remedy the deficiencies of the Nirmal reference. However, the Zhang reference neither teaches nor suggests at least one distinguishing feature of the present invention – that is, (1) that the first substrate in the present claims has a maximum surface roughness R_{max} in the range of 0% to 50%, obtained from a ratio of a maximum surface roughness R_{max} of the first substrate to the thickness of the organic layer. Accordingly, the presently claimed invention is not enabled by the combination of the teachings of Zhang and Nirmal.

In summary, Nirmal fails to teach or suggest at least two features of independent claims 1, 7, 13, and 19, and accordingly Nirmal neither anticipates those claims nor renders them unpatentable. Even the combination of the teachings of the Zhang reference with the Nirmal reference fails to anticipate at least one expressly claimed feature of the present invention.

With respect to dependent claims 2 and 8, their patentability is clear at least by virtue of their dependency from presently amended claims 1 and 7, respectively.

Dependent claims 3, 9, 15, and 21 each expressly requires “a surface of said second substrate, on which said electrode is formed, has a maximum surface roughness R_{max} in the range of 0% to 50% obtained from a ratio of a maximum surface roughness R_{max} (nm) of said second substrate to the thickness (nm) of said organic layer.” Since Nirmal fails to teach or suggest a maximum surface roughness in the range of 0% to 50% for *any* substrate, Nirmal fails to anticipate claims 3, 9, 15, and 21 also.

With respect to dependent claims 5, 6, 11, and 12, their patentability is clear at least by virtue of their dependency from presently amended claims 1 and 7, respectively.

None of claims 1-3, 5-9, and 11-24 is anticipated by Nirmal. Accordingly, withdrawal of the rejection of those claims under 35 U.S.C. §102(b) as being anticipated by the Nirmal published application is in order and is earnestly solicited.

Prior Art Rejection -- claims 4 and 10

Claims 4 and 10 – which depend indirectly from claims 1 and 7, respectively – were rejected under 35 U.S.C. §102(b) as being anticipated by Nirmal, with the article by Zhang being cited to show that PVK has a glass transition temperature greater than 40°C and with US 4,744,637 (Sekimura) being cited as evidence to show that ITO – that is, indium-tin-oxide – in fact has a linear expansion coefficient of 20 ppm/°C or less. Office Action, page 6. The rejection is respectfully traversed.

The deficiencies of the Nirmal reference are discussed in detail above. Thus the patentability of claims 4 and 10 is clear at least by virtue of their dependency from presently amended claims 1 and 7, respectively.


Conclusion

Applicant respectfully submits that the present amendments and arguments serve to obviate all rejections of record. If there are any questions, the Examiner is invited to contact Richard Gallagher, Registration No. 28,781, at (703) 205-8008.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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